Space Weather Forecast

Issued on Saturday 19 October 2024 at 01:17 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Isolated Moderate flares likely. Chance of G1 Minor Storm intervals days 3-4 (21-22 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Moderate with three Moderate-class flares observed, all from a region approaching the southwest limb. There are nine sunspot regions currently on the disc, with the most complex of these being a relatively small region in the northwest. Two of these regions are now approaching the southwest limb, so difficult to assess. The other regions remain small and relatively simple with a number of these showing signs of decline.

No Earth-directed CMEs (coronal mass ejections) were observed.

Solar Wind / Geomagnetic Activity: Solar winds were generally at background to slightly elevated levels, ranging between 350-430 km/s. Interplanetary Magnetic Field (IMF), was Weak to Moderate, with its north-south component turbulent, but just about favouring a negative orientation (southward) overall. Geomagnetic activity was Quiet to Active (Kp1-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background, with no Solar Radiation Storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is forecast with isolated M-class flares likely.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Background winds are most likely to persist, however spells of slightly elevated to elevated winds cannot be ruled out due to any interaction with the fast solar winds originating from the large coronal hole on the northwest disc during days 1-2 (19-20 Oct). However, this wind is likely passing north of Earth. A further small equatorial coronal hole may bring its faster solar winds late day 3 (21 Oct) and into day 4 (22 Oct). Mainly Quiet to Unsettled geomagnetic activity is expected. There is a chance of Active spells on days 1-2 (19-20 Oct), and chance of Active to G1 Minor Storm intervals days 3-4 (21-22 Oct). Any visible aurora for the UK is likely to remain limited to the far north of Scotland.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is due to remain at background, with no Solar Radiation Storms expected.

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Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	20	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	60	60	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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